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From raw materials to customers: Supply chain management in the service industry

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Abstract:

No company can operate without a supply chain. Recent years have seen change in the way many companies manage their supply chains - holistically rather than as a series of separate pieces. Manufacturers have taken the lead in improving supply chain management, but now the fast-growing service industry is adopting these principles. A study in the health care area illustrates how service businesses can benefit from the decreased lead times, faster product development, higher quality, and reduced costs that can accompany successful supply chain management.

Full Text:

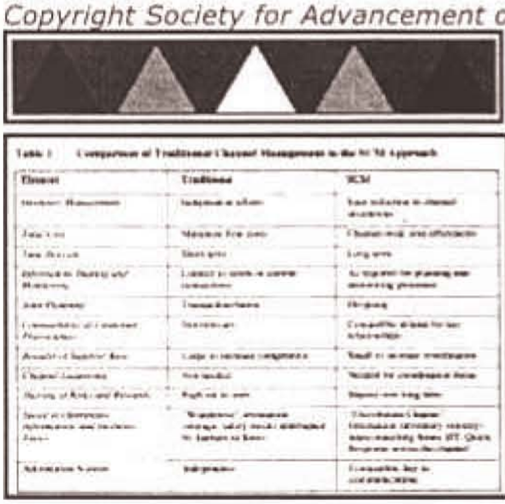

Table 1

Supply chain management (SCM) is a familiar concept in manufacturing, but service industries are just now recognizing the value of successfully implementing it. Although certain concepts should be applied while successfully managing a supply chain, companies coordinate their individual supply chains in many different ways. "Thus, in application, supply chain management practices exist along a continuum, from more traditional approaches, where the organization focuses only on the direct affects upon itself, to the more expansive, supply chain, channel-wide perspective" (Cooper et al., 1997, p. 68). Table 1 compares the traditional approach to channel management to the supply chain approach (Cooper et al., 1997, p. 69).

An effective supply chain is crucial to the success of a business. "One recent study of the US Food Industry estimated that poor coordination among supply chain partners was wasting $30 billion annually" (Fisher, 1997, p. 106). This can be illustrated if we consider the traditional view of a supply chain as similar to a pipe that carries the service or product being provided. When the pipe becomes clogged, the entire system must be flushed to solve the problem. Similarly, when a supply chain does not

Now, however, companies are implementing a new type of supply chain management, where the firm views the supply channel as a whole system instead of concentrating of each part of the process. The company focuses on all efforts, from the procurement of raw materials to the distribution of the finished product, and how each effort relates to the others (Andraski, 1998). This allows more communication to exist within the pipe and problems to be more easily identified.

We will show that implementing effective SCM is an advantage for companies that provide services. Five tools of SCM that will be described are: making and keeping relationships, implementing new technology in the supply channel, the use of forecasting to increase supply chain effectiveness, outsourcing to increase efficiency, and cost management as a strategic weapon. A case study from the health care industry will be used to reinforce the importance and value of SCM in the service sector. We will evaluate implementation steps and the benefits and limitations of supply chain management. Finally, a discussion of our conclusions on the subject of SCM in the service industry is provided.

Service Oriented SCM

The service industry is becoming increasingly dominant in the United States, and employment numbers are shifting from manufacturing toward services. The problem is that the separation between the service industry and manufacturing is not always as black and white as many experts thought. Sometimes there is a gray area, a mixed industry that blends both the manufacturing and service sectors. An effective supply chain is needed to link these sectors.

As the service sector grows in importance, it is evident that the face of tomorrow's business is service. In fact, "services account for nine of ten of the small business-dominated industries that will log the fastest growth through 2005, according to analysis by the U.S. Small Business Administration (SBA)" (McCune, 1995, p. 50). There are a number of reasons why services are growing. The number one reason is that baby boomers are getting to retirement age (McCune, 1995). For example, residential care came out at the top of the fastest growing industries between 1992 and 2005, shown in Table 2 (McCune, 1995, p. 51).

Other service industries experiencing rapid growth include, child care, medical and dental laboratory, and individual and family services, just to name a few (McCune, 1995). This reflects the increase in the dual income family, which is a part of many Americans' lives. As the number of working women grows, the need for child care and counseling increases. The extreme growth of baby boomer consumers has mandated an increase in the service sector. Handling the expanding volume while providing optimal customer service requires businesses to rethink their strategies for success. Supply chain management is becoming a necessity for continued competitiveness and success.

Relationships: The most important contributor to success in the service industry is building strong relationships with customers. Companies can benefit in numerous ways from loyal customers, including increased revenues, predictable sales and profits, low customer turnover, generation of new business from word of mouth, and costs that can be amortized over a longer period (Gwinner et al., 1998). However, for the relationship to be successful and long term, the customer must also benefit. Table 3 indicates some of these benefits (Gwinner et al., 1998).

There are traditional and modern views of supply chain management. Similarly, service companies can choose between the bow tie (traditional) and diamond (modern) approaches when building relationships with each other (Cooper et al., 1995). The bow tie idea provides for interaction only between the buyer of one business and the seller of another, while the diamond approach allows all functions to communicate (Cooper et al., 1997). These processes are represented in Figure 1 (Cooper et al., 1997, p. 77).

The traditional process requires a kind of filter, in the form of an account manager (Cooper et al., 1997). However, this does not maximize communication between the firms, which may decrease relationships and lower efficiency (Cooper et al., 1997). In the diamond approach, advantageous relationships are more apt to occur and greater communication results. Reasons for forming relationships within a service industry include necessity, asymmetry, reciprocity, efficiency, stability, and legitimacy (Cooper et al., 1997).

Technology: Changes in technology have extreme effects on how a firm manages its supply chain. Specifically, electronic commerce (EC) is extending value within the SCM process. Businesses use EC to integrate their internal functions with the applications of shippers, suppliers, and customers (Scarborough & Spatarella, 1998). Electronic commerce allows shipment status messages to be received instantaneously and provides vendor-managed and continuous replenishment inventory programs (DeCovny, 1998). This new technology decreases inventory risks and maximizes the sale of products with short life cycles by reducing the time it takes to reach the broadest possible market (Scarborough & Spatarella, 1998). EC also promotes competitive advantages by having a more accessible order-entry process, decreased paper handling, and less re-keying of information (DeCovny, 1998).

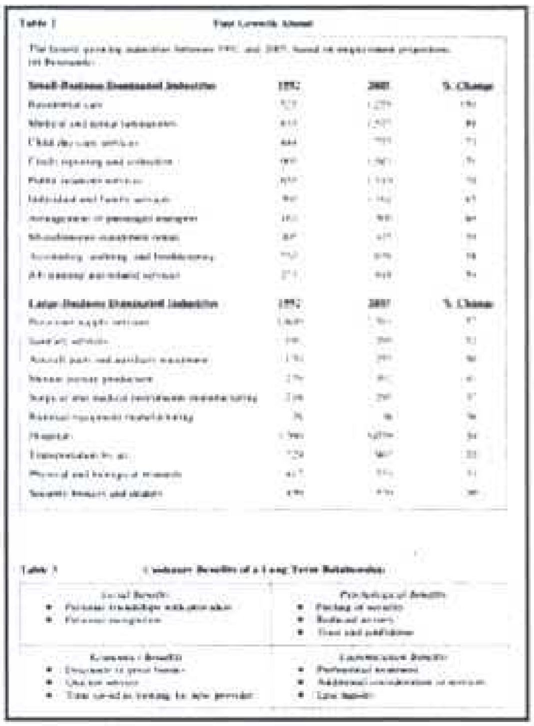

Table 2
Table 3

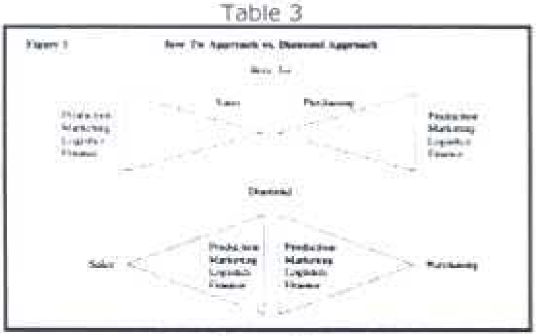

Figure 1

Although there are obvious benefits for companies using EC in their supply chain, barriers to this technology also exist. The problem that most often arises is a security breach within the system (DeCovny, 1998). Another difficulty is that many organizations lack the resources to integrate EC with their supply chain, including skilled employees (DeCovny, 1998). Some firms choose to seek help from consultants and advisors before making mistakes with their technology procurement endeavor (Scarborough & Spatarella, 1998). This makes the switch to electronic commerce quite a bit easier.

Forecasting: A company can effectively use customer data to synchronize its supply chain operations with consumer needs. This can be done through customer supplied forecasts, which many people deem a necessary part of managing a supply chain. Robert Altabet, who is vice president of business management in the Duracell North Atlantic Group, states that, "the latest emphasis of forecasting has been in the areas of scheduling and logistics, renamed `Supply Chain Management'" (Altabet, 1998, p. 3). Another article says, "forecast horizons can impact a host of functional areas in the supply chain" (Saran, 1998, p. 23).

An accurate sales forecast can have numerous advantageous results in the process of SCM. Effective forecasts provide vendors with more accurate data, improve efficiencies in product distribution, reduce supply chain inventories, and enhance customer service (Kiely, 1998/99). In general, forecasting helps businesses serve their customers more efficiently, without the constant fear of excess inventory. However, if SCM uses an erroneous forecast, the results will be felt throughout the entire system.

Outsourcing: Manufacturing and service industries are grappling with the decision of whether to make or buy the parts used to manufacture their products. To answer this question, a company must weigh the cost factors. Experts believe that companies are heading toward greater specialization and outsourcing for the materials needed to make their product (Laios & Moschuris, 1999). Product complexity and commercial uncertainty is linked to how much technology is involved and the degree of risk for the business (Laios & Moschuris, 1999). In the service industry satisfying the customer is the highest priority. Businesses must link the decision to make or buy based on which option provides optimal customer satisfaction and the most cost-effective methodology. This is why procurement is being recognized as an important tool for improving a service corporation's bottom line (Anderson & Katz, 1998). Generally, the end product and ultimately the customer will benefit from outsourcing in the service industry. This importance is being pushed on the outsourcer to ensure that materials will arrive on time and in good condition. Service firms must consider quality, reliability, transportation costs, the costs of acquiring and managing, and the value of the final product to the customer (Anderson & Katz, 1998).

Cost Management: Cost management is an important strategic weapon for a business. "External purchases of products and services account for more than 50 percent of total costs" (Degraeve & Roodhooft, 1999, p. 5). Without sacrificing quality, services must create a reliable, cost effective supply chain to be competitive in the marketplace. Technology has increased the reliability of cost management systems through the use of computer packages designed for specific companies (Anderson & Katz, 1998). A mathematical model has been created to weigh the different costs of a supply chain. The objective of this model is to choose the right combination of suppliers, with the particular criteria important for the purchasing decision. The model's benefits include the ability to compare the cost savings from one year to the next. Results can even be used as a negotiation tool with a firm's suppliers (Anderson & Katz, 1998). An effective way to save money is for a business to increase efficiency through technology and improved accounting systems.

SCM in the Health Care Industry (A Case Study)

Increased revenues and enhanced service are key corporate objectives. With this in mind, health care agencies are trying to figure out ways to cut costs but still keep their customers satisfied, and many are now looking to their supply chains for the answers. A health care supply chain deals with factors such as the expiration dates on products, product shipping and delivery location, multiple product mix (to build custom packages for customers), multiple delivery locations, multiple distribution points, and multiple accounts and customers (Smith, 1997). However, health care is different from other industries because hospitals are unable to pinpoint the reasons for decreases in the demand for their services (Smith, 1997). This is because demand is based on each individual patient, whose needs and insurance-related restrictions are difficult to predict effectively (Smith, 1997). Health care agencies have to order many different types of equipment and supplies based on customers' diverse needs, while still increasing revenues and satisfying the customer (Smith, 1997). This can be nearly impossible to achieve.

The position of a hospital material manager is becoming important because of the decisions they make that deal with inventory. They have the responsibility of choosing what, when, and how much to order. Examples of what these managers can save a hospital is shown by the following: "Cedars-Sinai Health System, Los Angeles, beat its own estimates and saved $6.73 per patient day, or $1.56 million, in fiscal year 1998, by consolidating materials management operations" (Supply Chain Streamlining Nets Big Savings, 1998). Another example is Eisenhower Memorial hospital, which converted to just-in-time distribution and decreased inventory from $1.5 million to $142,000 in just 18 months (DeJohn, 1998). These two hospitals were able to reduce their inventory levels significantly, which increased the hospital's revenues. Cedars-Sinai has a well run, off site warehouse labeled "materials service center," which is run mainly by new technology, computers, and electronic tickets (Supply Chain Streamlining Nets Big Savings, 1998). Messages from the nurses to the warehouses and the warehouses to the distributor are sent electronically, allowing for greater communication between the hospital and the warehouse. The hospital converted the unused inventory rooms into patient rooms (Supply Chain Streamlining Nets Big Savings, 1998). The increased bed capacity led to higher turnover, greater profits, and increased customer satisfaction.

Eisenhower Memorial signed a contract with Allegiance Health Care Corporation, McGraw Park, Ill, to handle their entire inventory, and also employed people as "materials service coordinators" to improve the efficiency of their system (DeJohn, 1998). These people will work closely with the physicians to improve relations between departments and will ultimately take over their inventory responsibility (DeJohn, 1998). This frees clinical staff time for patient care. The outcome is improved customer satisfaction (DeJohn, 1998). Hiring people to deal with the logistics of the hospital benefits the doctors, nurses, and the customer in the long run. Efficient inventory management leads to greater profits by decreasing inventory costs and increasing customer satisfaction.

With these improvements in materials management, hospitals are searching for more breakthroughs to help cut costs and make the supply chain more effective. An example of this is McKesson Corporation, renamed McKesson General Medical after acquiring General Medical Corporation. McKesson, a distributor, is planning to offer one-stop shopping for pharmaceuticals and medical/surgical products. A shorter supply chain decreases the costs and distributions that are involved and often makes the supply chain more effective and efficient. This is the motivation for McKesson General Medical, although its one-stop shopping theory is highly risky (Speer, 1997). We believe that the idea of one-stop shopping can be highly profitable if implemented cautiously. To reduce the risk, McKesson should allow its customers, the hospitals, to have a stake in the company. This can be accomplished by selling shares of stock and allowing members of the hospital to sit on its board and oversee the management of the new system.

Health care agencies will be evaluating the effectiveness of one-stop shopping. McKesson's goal is to hire distributors that will service all of its units and offer volume discounts (Speer, 1997). Implementation of this approach will necessitate restructuring the new company, including building highly automated warehouses, offering same-day service, and reducing the total number of centers (Speer, 1997). McKesson General Medical has already implemented effective supply chain changes, which increased sales, and is now waiting to include the one-stop shopping idea (Speer, 1997). This restructuring has extended its customer base from 39% to 49%, says spokesperson John Lawrence (Speer, 1997), a great success for the company. However, there will always be competition, and the likelihood of McKesson General Medical monopolizing the market is very unlikely. The prospect of combining pharmaceuticals and medical supplies is appealing to many materials managers who wish to increase revenue for their companies.

To understand the changes that health care companies are making, it is necessary to comprehend what these businesses are trying to achieve. "Pharmaceuticals are small in size but high in dollar amount. Medical/surgical supplies are the opposite. The two businesses are completely different," states Larry Dooley, vice president of distribution services at VHA (Speer, 1997, p. 48). Companies are trying to mesh the different businesses in order to serve their customers better. With today's technology and a well managed system, the opportunity for growth with this new merger is extraordinary.

Just-In-Time Inventory Management: Within the health care industry, there has been a greater reliance on just-in-time (JIT) inventory and total quality management (TQM). The concept of JIT, in particular, is taking hold and companies are restructuring to accommodate it. Just-in-time inventory management is the process of receiving inventory exactly when needed instead of having a stocked warehouse of supplies. Advantages include better detection of quality problems, shorter product development cycles, quicker customer response time, and lower holding cost (Coleman & Jennings, 1998). For these reasons, JIT systems have made it possible to substantially increase revenues for many firms who use it. JIT can be a direct link between what the customer desires and how a company can achieve it. Service industries are always looking for better ways to serve their customers, and faster, more flexible, better-quality service is what customers want. However, companies that choose to implement JIT face the possibility of being left high and dry if their suppliers are unable to deliver (Coleman & Jennings, 1998), as shown by the UPS strike.

Health care companies have made many improvements because they have used a just-intime system. Inventory costs are a significant liability for these companies, and, with JIT, a huge portion of the liability is cut out of the equation (Coleman & Jennings, 1998). Hospitals that use JIT now have more room for patients. Those who don't use this type of inventory system are experiencing excess inventory and turnover difficulties (Coleman & Jennings, 1998). As an example, hospitals that have had expired drugs can't sell them at a discount, because they have no market value. They are waste and have a direct negative affect on the bottom line.

With all of the advantages of JIT, some health care companies are ignoring the disadvantages and problems that a JIT system can cause. The UPS case is a great example of the inability of a business to compensate when a product isn't delivered (Coleman & Jennings, 1998). This case illustrated the advantage of carrying significant inventories to protect against contingencies (Coleman & Jennings, 1998). It supports the old saying "expect the unexpected." Although it is valuable to prepare for unexpected events, it is also not productive to always second-guess yourself. Businesses must find the proper amount of inventory that is neither excessive nor unsafe in the case of unexpected events.

Evaluation of SCM in the Service Industry

A service business must be cautious when implementing SCM. The concept of SCM is holistic and must focus on all efforts. "An understanding of how cost accumulates through the supply chain in a holistic way, based on the combinations of products and customers, is essential to handling the business issues associated with the supply chain" (Braithwaite & Samakh, 1998, p. 75). It is also important that both internal and external customers are taken into account when establishing a supply chain. Although most companies realize that the supply chain is affected by external links with such members as suppliers, partners, and customers, they often forget that success also depends on internal departments that serve one another and contribute to the value adding process (Morash & Clinton, 1997).

Benefits of SCM: There are many benefits to SCM, which outweigh the added energy that must be spent. These include decreased lead times, faster product development, increased quality, and reduced costs (Choi & Rungtusanatham, 1999). Also, SCM greatly improves customer service and contributes to synergy within the process. This is especially crucial in service industries, where the emphasis is on meeting the customer's needs. All of the benefits lead to greater competitiveness. As one article stated, "the reward - a remarkable competitive advantage that generates high growth in sales and profits" (Pagh & Cooper, 1998, p. 28).

Limitations of SCM: There may be severe resistance within the company when implementing SCM, because it requires modification of the attitudes and behavior of those involved in the system - employees and the employer. Resistance to change is common and predicting employee behavior is difficult. A lack of understanding by senior management is another possible reason for the resistance to supply chain management (Andraski, 1998), given that an unwritten rule of business is to minimize risk and cover all angles. Executives may feel that SCM is too simple and is merely a passing whim (Andraski, 1998), however, their commitment is vital to guide other employees and to obtain required resources.

Conclusion

Supply chain management in the service industry has taken off in recent years, and many companies are considering it. How a manager handles his company's supply chain will help determine if its product will make a profit in the marketplace. Because there is a lack of knowledge and understanding to assist managers in the service sector, it is crucial that today's managers obtain a full appreciation for what supply chain management is and how it can be implemented successfully.

A better appreciation for the supply chain management process can be gained by understanding service industries. A crucial example is the health industry, which is expected to be one of the fastest growing industries in the future. Health care is attempting to implement a supply chain that delivers quality products at minimal cost. Some of the problems that have arisen have to do with the lack of an efficient program to deal primarily with health care facilities and just-in-time management. Benefits, limitations, and the implementation steps of SCM help show where the new health care phenomena are headed.

SCM is not a passing fad but rather an evolution in the operations of services. We predict that services entering the SCM gate will save millions of dollars that would otherwise be spent because of a dysfunctional supply chain. Since the SCM concept is fairly new, it is vital that managers do not make a "leap of faith," so to speak, but research the process thoroughly. This should enable them to choose a supply chain that will be most beneficial in obtaining the main objective for any company, which is to make a profit.

[Reference]

REFERENCES

[Reference]

Altabet, R. (1998, Fall). The forecaster as a key member of the strategic planning team. The Journal of Business Forecasting Methods & Systems, 17 (3), 3-6.

Anderson, M. G., & Katz, P. B. (1998). Strategic sourcing. The International Journal of Logistics Management, 9 (1) 1-13.

[Reference]

Andraski, J. C. (1998). Leadership and the realization of supply chain collaboration. Journal of Business Logistics, 19 (2), 9-11.

Braithwaite, A., & Samakh, E. (1998). The cost-to-serve method. The International Journal of Logistics Management, 9 (1), 69-84.

[Reference]

Choi, T. Y., & Rungtusanatham, M. (1999, Winter). Comparison of quality management practices: Across the supply chain and industries. The Journal of Supply Chain Management, 35 (1), 20-27.

Coleman, B. J., & Jennings, K. M. (1998). The UPS strike: Lessons for just-in-timers. Production and Inventory Management Journal, 39 (4), 63-67.

Cooper, M. C., Ellram, L. M., Gardner, J. T., & Hanks, A. M. (1997). Meshing multiple alliances. Journal of Business Logistics, 18 (1), 67-89.

DeCovny, S. (1998, November/December). The electronic commerce comes of age. Journal of Business Strategy, 19 (6), 38-44.

[Reference]

Degraeve, Z., & Roodhooft, F. (1999, Winter). Effectively selecting suppliers using total cost of ownership. The Journal of Supply Chain Management, 35 (1), 5-10.

DeJohn, P. (1998, June). New materials specialists add personal touch to supply chain. Hospital Materials Management, 23 (6), 1, 13.

Fisher, M. L. (1997, March/April). What is the right supply chain for your product? Harvard Business Review, 75 (2), 105-116.

[Reference]

Gwinner, K. P, & Gremler, D. D., & Bitner, M. J. (1998, Spring). Relational benefits in services industries: The customer's perspective. Journal of the Academy of Marketing Science, 26 (2), 101-114.

Kiely, D. (1998/1999, Winter). Synchronizing supply chain operations with consumer demand using customer data. The Journal of Business Forecasting Methods & Systems, 17(4),3-9.

[Reference]

Laios, L., & Moschuris, S. (1999, Winter). An empirical investigation of outsourcing decisions. Journal of Supply Chain Management, 35 (1), 33-41.

McCune, J. (1995, May/June). The face of tomorrow. The Journal of Business Strategy, 16 (3), 50-55.

Morash, E. A., & Clinton, S. R. (1997, Spring). The role of transportation capabilities in international supply chain management. Transportation Journal, 36 (3), 5-17.

Pagh, J. D., & Cooper, M. C. (1998). Supply chain postponement and speculation strategies: How to choose the right

strategy. Journal of Business Logistics, 19 (2), 13-33.
Saran, V. (1998, Spring). The role of life cycles and forecast horizons in a forecasting system: Reebok's perspective. The Journal of Business Forecasting Methods & Systems, 17 (1), 23, 28.

[Reference]

Scarborough, M. C., & Spatarella, J. J. (1998, July/August). Getting behind the business of electronic commerce. TMA Journal, 18 (4), 42-44.
Smith, J. (1999, January). Let suppliers help plan purchase needs. Hospital Materials Management, 24 (1), 12-13. Speer, T. L. (1997, August 5). From docks to docs. Hospitals & Health Networks, 71 (15), 48-50.
Supply Chain Streamlining Nets Big Savings. (1998, November). Hospital Materials Management, 23 (11), 2, 10.

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